SEQUENCE LISTING

<110> Sternberg, Paul W.
Barr, Maureen M.

<120> POLYCYSTIC KIDNEY DISEASE GENE HOMOLOGS REQUIRED FOR MALE MATING BEHAVIOR IN NEMATODES AND ASSAYS BASED THEREON

<130> 16021 2901B

<140> Unassigned
<141> 2000-09-05

<150> 09/479,467
<151> 2000-01-06

<150> 60/115,127
<151> 1999-01-06

<160> 16

<170> PatentIn Ver. 2.0

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Leu Trp Leu Gly Ala Leu Ala Gly Gly Pro Gly Arg Gly Cys Gly Pro
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Cys Glu Pro Pro Cys Leu Cys Gly Pro Ala Pro Gly Ala Ala Cys Arg
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Val Asn Cys Ser Gly Arg Gly Leu Arg Thr Leu Gly Pro Ala Leu Arg
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Ala Leu Asp Val Gly Leu Leu Ala Asn Leu Ser Ala Leu Ala Glu Leu
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gat ata agc aac aac aag att tct acg tta gaa gaa gga ata ttt gct   336
Asp Ile Ser Asn Asn Lys Ile Ser Thr Leu Glu Glu Gly Ile Phe Ala
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aat tta ttt aat tta agt gaa ata aac ctg agt ggg aac ccg ttt gag   384
Asn Leu Phe Asn Leu Ser Glu Ile Asn Leu Ser Gly Asn Pro Phe Glu
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Pro Thr Cys Arg Gly Pro Thr Leu Leu Gln His Val Phe Pro Ala Ser
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Pro Gly Ala Thr Leu Val Gly Pro His Gly Pro Leu Ala Ser Gly Gln
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Leu Ala Ala Phe His Ile Ala Ala Pro Leu Pro Val Thr Asp Thr Arg
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Trp Asp Phe Gly Asp Gly Ser Ala Glu Val Asp Ala Ala Gly Pro Ala
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gcc tcg cat cgc tat gtg ctg cct ggg cgc tat cac gtg acg gcc gtg  1008
Ala Ser His Arg Tyr Val Leu Pro Gly Arg Tyr His Val Thr Ala Val
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ctg gcc ctg ggg gcc ggc tca gcc ctg ctg ggg aca gac gtg cag gtg  1056
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Leu Glu Ala Ala Tyr Ser Ile Val Ala Leu Gly Glu Glu Pro Ala Arg
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Gly His Cys Tyr Arg Leu Val Val Glu Lys Ala Ala Trp Leu Gln Ala
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Gln Glu Gln Cys Gln Ala Trp Ala Gly Ala Ala Leu Ala Met Val Asp
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Ser Pro Ala Val Gln Arg Phe Leu Val Ser Arg Val Thr Arg Ser Leu
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ccc acc ggg tgg tgt aac acc gac ctg tgc tca gcg ccg cac agc tac  1584
Pro Thr Gly Trp Cys Asn Thr Asp Leu Cys Ser Ala Pro His Ser Tyr
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Val Cys Glu Leu Gln Pro Gly Gly Pro Val Gln Asp Ala Glu Asn Leu
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Val Tyr Arg Leu Leu Ser Thr Ala Gly Thr Pro Glu Asn Gly Ser Glu
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cct gag agc agg tcc ccg gac aac agg acc cag ctg gcc ccc gcg tgc  1920
Pro Glu Ser Arg Ser Pro Asp Asn Arg Thr Gln Leu Ala Pro Ala Cys
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atg cca ggg gga cgc tgg tgc cct gga gcc aac atc tgc ttg ccg ctg  1968
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Ser Val Pro Ala Gly Pro Pro Ala Gln Tyr Ser Val Thr Leu His Gly
690 695 700

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Gln Asp Val Leu Met Leu Pro Gly Asp Leu Val Gly Leu Gln His Asp
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His Leu Pro Ala Gln Leu Glu Gly Thr Trp Gly Cys Pro Ala Cys Ala
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Val Val Ser Pro Val Ala Gly Leu Arg Val Ile Tyr Pro Ala Pro Arg
820 825 830

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Asp Gly Arg Leu Tyr Val Pro Thr Asn Gly Ser Ala Leu Val Leu Gln
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Ser Leu Ser Ala Arg Phe Glu Asn Val Cys Pro Ala Leu Val Ala Thr
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885 890 895

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Val Glu Asn Ser Ala Ser Arg Ala Asn Leu Ser Leu Arg Val Thr Ala
915 920 925

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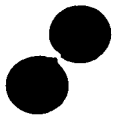

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Phe Gln Asn Val Val Phe Asn Val Ile Tyr Gln Ser Ala Ala Val Phe
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aag ctc tca ctg acg gcc tcc aac cac gtg agc aac gtc acc gtg aac   3024
Lys Leu Ser Leu Thr Ala Ser Asn His Val Ser Asn Val Thr Val Asn
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tac aac gta acc gtg gag cgg atg aac agg atg cag ggt ctg cag gtc   3072
Tyr Asn Val Thr Val Glu Arg Met Asn Arg Met Gln Gly Leu Gln Val
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Ser Thr Val Pro Ala Val Leu Ser Pro Asn Ala Thr Leu Ala Leu Thr
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Glu Ser Phe Pro Val Pro Asp Pro Ser Val Ala Gln Val Leu Val Glu
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His Asn Val Thr His Thr Tyr Ala Ala Pro Gly Glu Tyr Leu Leu Thr
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Val Leu Ala Ser Asn Ala Phe Glu Asn Leu Thr Gln Gln Val Pro Val
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Val Leu Thr Gln Ser Gln Pro Ala Ala Asn His Thr Tyr Ala Ser Arg
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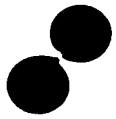

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Ala Ala Val Gln Thr Gly Asp Asn Ile Thr Trp Thr Phe Asp Met Gly
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Gly His Leu Ala Arg Ser Leu His Val Leu Val Phe Val Leu Glu Val
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Leu Arg Val Glu Pro Ala Ala Cys Ile Pro Thr Gln Pro Asp Ala Arg
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Leu Thr Ala Tyr Val Thr Gly Asn Pro Ala His Tyr Leu Phe Asp Trp
        1315                1320                1325

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Glu Pro Glu Val Gly Asn Val Thr Leu Gln Pro Glu Arg Gln Phe Val
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Pro Tyr Arg Tyr Thr Trp Asp Phe Gly Thr Glu Glu Ala Ala Pro Thr
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tca gcc ctg gtg gag gtg cag gag ccc gtg ctg gtc acc agc atc aag   4416
Ser Ala Leu Val Glu Val Gln Glu Pro Val Leu Val Thr Ser Ile Lys
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gtc aat ggc tcc ctt ggg ctg gag ctg cag cag ccg tac ctg ttc tct   4464
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Gly Gly Trp Leu Glu Gly Pro Glu Val Thr His Ala Tyr Asn Ser Thr
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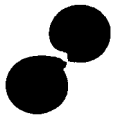

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gag acc tcc gag cca ttt acc acc cat agc ttc ccc aca ccc ggc ctg   5328
Glu Thr Ser Glu Pro Phe Thr Thr His Ser Phe Pro Thr Pro Gly Leu
                1765                1770                1775

cac ttg gtc acc atg acg gca ggg aac ccg ctg ggc tca gcc aac gcc   5376
His Leu Val Thr Met Thr Ala Gly Asn Pro Leu Gly Ser Ala Asn Ala
            1780                1785                1790

acc gtg gaa gtg gat gtg cag gtg cct gtg agt ggc ctc agc atc agg   5424
Thr Val Glu Val Asp Val Gln Val Pro Val Ser Gly Leu Ser Ile Arg
        1795                1800                1805

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Ala Ser Glu Pro Gly Gly Ser Phe Val Ala Ala Gly Ser Ser Val Pro
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Phe Trp Gly Gln Leu Ala Thr Gly Thr Asn Val Ser Trp Cys Trp Ala
1825                1830                1835                1840

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Val Pro Gly Gly Ser Ser Lys Arg Gly Pro His Val Thr Met Val Phe
                1845                1850                1855

ccg gat gct ggc acc ttc tcc atc cgg ctc aat gcc tcc aac gca gtc   5616
Pro Asp Ala Gly Thr Phe Ser Ile Arg Leu Asn Ala Ser Asn Ala Val
            1860                1865                1870

agc tgg gtc tca gcc acg tac aac ctc acg gcg gag gag ccc atc gtg   5664
Ser Trp Val Ser Ala Thr Tyr Asn Leu Thr Ala Glu Glu Pro Ile Val
        1875                1880                1885

ggc ctg gtg ctg tgg gcc agc agc aag gtg gtg gcg ccc ggg cag ctg   5712
Gly Leu Val Leu Trp Ala Ser Ser Lys Val Val Ala Pro Gly Gln Leu
    1890                1895                1900

gtc cat ttt cag atc ctg ctg gct gcc ggc tca gct gtc acc ttc cgc   5760
Val His Phe Gln Ile Leu Leu Ala Ala Gly Ser Ala Val Thr Phe Arg
1905                1910                1915                1920

cta cag gtc ggc ggg gcc aac ccc gag gtg ctc ccc ggg ccc cgt ttc   5808
Leu Gln Val Gly Gly Ala Asn Pro Glu Val Leu Pro Gly Pro Arg Phe
                1925                1930                1935

tcc cac agc ttc ccc cgc gtc gga gac cac gtg gtg agc gtg cgg ggc   5856
Ser His Ser Phe Pro Arg Val Gly Asp His Val Val Ser Val Arg Gly
            1940                1945                1950

aaa aac cac gtg agc tgg gcc cag gcg cag gtg cgc atc gtg gtg ctg   5904
Lys Asn His Val Ser Trp Ala Gln Ala Gln Val Arg Ile Val Val Leu
        1955                1960                1965

gag gcc gtg agt ggg ctg cag gtg ccc aac tgc tgc gag cct ggc atc   5952
Glu Ala Val Ser Gly Leu Gln Val Pro Asn Cys Cys Glu Pro Gly Ile
    1970                1975                1980

gcc acg ggc act gag agg aac ttc aca gcc cgc gtg cag cgc ggc tct   6000
Ala Thr Gly Thr Glu Arg Asn Phe Thr Ala Arg Val Gln Arg Gly Ser
1985                1990                1995                2000

cgg gtc gcc tac gcc tgg tac ttc tcg ctg cag aag gtc cag ggc gac   6048
Arg Val Ala Tyr Ala Trp Tyr Phe Ser Leu Gln Lys Val Gln Gly Asp
                2005                2010                2015
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tcg ctg gtc atc ctg tcg ggc cgc gac gtc acc tac acg ccc gtg gcc   6096
Ser Leu Val Ile Leu Ser Gly Arg Asp Val Thr Tyr Thr Pro Val Ala
            2020                2025                2030

gcg ggg ctg ttg gag atc cag gtg cgc gcc ttc aac gcc ctg ggc agt   6144
Ala Gly Leu Leu Glu Ile Gln Val Arg Ala Phe Asn Ala Leu Gly Ser
        2035                2040                2045

gag aac cgc acg ctg gtg ctg gag gtt cag gac gcc gtc cag tat gtg   6192
Glu Asn Arg Thr Leu Val Leu Glu Val Gln Asp Ala Val Gln Tyr Val
    2050                2055                2060

gcc ctg cag agc ggc ccc tgc ttc acc aac cgc tcg gcg cag ttt gag   6240
Ala Leu Gln Ser Gly Pro Cys Phe Thr Asn Arg Ser Ala Gln Phe Glu
2065                2070                2075                2080

gcc gcc acc agc ccc agc ccc cgg cgt gtg gcc tac cac tgg gac ttt   6288
Ala Ala Thr Ser Pro Ser Pro Arg Arg Val Ala Tyr His Trp Asp Phe
                2085                2090                2095

ggg gat ggg tcg cca ggg cag gac aca gat gag ccc agg gcc gag cac   6336
Gly Asp Gly Ser Pro Gly Gln Asp Thr Asp Glu Pro Arg Ala Glu His
            2100                2105                2110

tcc tac ctg agg cct ggg gac tac cgc gtg cag gtg aac gcc tcc aac   6384
Ser Tyr Leu Arg Pro Gly Asp Tyr Arg Val Gln Val Asn Ala Ser Asn
        2115                2120                2125

ctg gtg agc ttc ttc gtg gcg cag gcc acg gtg acc gtc cag gtg ctg   6432
Leu Val Ser Phe Phe Val Ala Gln Ala Thr Val Thr Val Gln Val Leu
    2130                2135                2140

gcc tgc cgg gag ccg gag gtg gac gtg gtc ctg ccc ctg cag gtg ctg   6480
Ala Cys Arg Glu Pro Glu Val Asp Val Val Leu Pro Leu Gln Val Leu
2145                2150                2155                2160

atg cgg cga tca cag cgc aac tac ttg gag gcc cac gtt gac ctg cgc   6528
Met Arg Arg Ser Gln Arg Asn Tyr Leu Glu Ala His Val Asp Leu Arg
                2165                2170                2175

gac tgc gtc acc tac cag act gag tac cgc tgg gag gtg tat cgc acc   6576
Asp Cys Val Thr Tyr Gln Thr Glu Tyr Arg Trp Glu Val Tyr Arg Thr
            2180                2185                2190

gcc agc tgc cag cgg ccg ggg cgc cca gcg cgt gtg gcc ctg ccc ggc   6624
Ala Ser Cys Gln Arg Pro Gly Arg Pro Ala Arg Val Ala Leu Pro Gly
        2195                2200                2205

gtg gac gtg agc cgg cct cgg ctg gtg ctg ccg cgg ctg gcg ctg cct   6672
Val Asp Val Ser Arg Pro Arg Leu Val Leu Pro Arg Leu Ala Leu Pro
    2210                2215                2220

gtg ggg cac tac tgc ttt gtg ttt gtc gtg tca ttt ggg gac acg cca   6720
Val Gly His Tyr Cys Phe Val Phe Val Val Ser Phe Gly Asp Thr Pro
2225                2230                2235                2240

ctg aca cag agc atc cag gcc aat gtg acg gtg gcc ccc gag cgc ctg   6768
Leu Thr Gln Ser Ile Gln Ala Asn Val Thr Val Ala Pro Glu Arg Leu
                2245                2250                2255

gtg ccc atc att gag ggt ggc tca tac cgc gtg tgg tca gac aca cgg   6816
Val Pro Ile Ile Glu Gly Gly Ser Tyr Arg Val Trp Ser Asp Thr Arg
            2260                2265                2270

gac ctg gtg ctg gat ggg agc gag tcc tac gac ccc aac ctg gag gac   6864
Asp Leu Val Leu Asp Gly Ser Glu Ser Tyr Asp Pro Asn Leu Glu Asp
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                2275                2280                2285

ggc gac cag acg ccg ctc agt ttc cac tgg gcc tgt gtg gct tcg aca   6912
Gly Asp Gln Thr Pro Leu Ser Phe His Trp Ala Cys Val Ala Ser Thr
    2290                2295                2300

cag agg gag gct ggc ggg tgt gcg ctg aac ttt ggg ccc cgc ggg agc   6960
Gln Arg Glu Ala Gly Gly Cys Ala Leu Asn Phe Gly Pro Arg Gly Ser
2305                2310                2315                2320

agc acg gtc acc att cca cgg gag cgg ctg gcg gct ggc gtg gag tac   7008
Ser Thr Val Thr Ile Pro Arg Glu Arg Leu Ala Ala Gly Val Glu Tyr
                2325                2330                2335

acc ttc agc ctg acc gtg tgg aag gcc ggc cgc aag gag gag gcc acc   7056
Thr Phe Ser Leu Thr Val Trp Lys Ala Gly Arg Lys Glu Glu Ala Thr
            2340                2345                2350

aac cag acg gtg ctg atc cgg agt ggc cgg gtg ccc att gtg tcc ttg   7104
Asn Gln Thr Val Leu Ile Arg Ser Gly Arg Val Pro Ile Val Ser Leu
        2355                2360                2365

gag tgt gtg tcc tgc aag gca cag gcc gtg tac gaa gtg agc cgc agc   7152
Glu Cys Val Ser Cys Lys Ala Gln Ala Val Tyr Glu Val Ser Arg Ser
    2370                2375                2380

tcc tac gtg tac ttg gag ggc cgc tgc ctc aat tgc agc agc ggc tcc   7200
Ser Tyr Val Tyr Leu Glu Gly Arg Cys Leu Asn Cys Ser Ser Gly Ser
2385                2390                2395                2400

aag cga ggg cgg tgg gct gca cgt acg ttc agc aac aag acg ctg gtg   7248
Lys Arg Gly Arg Trp Ala Ala Arg Thr Phe Ser Asn Lys Thr Leu Val
                2405                2410                2415

ctg gat gag acc acc aca tcc acg ggc agt gca ggc atg cga ctg gtg   7296
Leu Asp Glu Thr Thr Thr Ser Thr Gly Ser Ala Gly Met Arg Leu Val
            2420                2425                2430

ctg cgg cgg ggc gtg ctg cgg gac ggc gag gga tac acc ttc acg ctc   7344
Leu Arg Arg Gly Val Leu Arg Asp Gly Glu Gly Tyr Thr Phe Thr Leu
        2435                2440                2445

acg gtg ctg ggc cgc tct ggc gag gag gag ggc tgc gcc tcc atc cgc   7392
Thr Val Leu Gly Arg Ser Gly Glu Glu Glu Gly Cys Ala Ser Ile Arg
    2450                2455                2460

ctg tcc ccc aac cgc ccg ccg ctg ggg ggc tct tgc cgc ctc ttc cca   7440
Leu Ser Pro Asn Arg Pro Pro Leu Gly Gly Ser Cys Arg Leu Phe Pro
2465                2470                2475                2480

ctg ggc gct gtg cac gcc ctc acc acc aag gtg cac ttc gaa tgc acg   7488
Leu Gly Ala Val His Ala Leu Thr Thr Lys Val His Phe Glu Cys Thr
                2485                2490                2495

ggc tgg cat gac gcg gag gat gct ggc gcc ccg ctg gtg tac gcc ctg   7536
Gly Trp His Asp Ala Glu Asp Ala Gly Ala Pro Leu Val Tyr Ala Leu
            2500                2505                2510

ctg ctg cgg cgc tgt cgc cag ggc cac tgc gag gag ttc tgt gtc tac   7584
Leu Leu Arg Arg Cys Arg Gln Gly His Cys Glu Glu Phe Cys Val Tyr
        2515                2520                2525

aag ggc agc ctc tcc agc tac gga gcc gtg ctg ccc ccg ggt ttc agg   7632
Lys Gly Ser Leu Ser Ser Tyr Gly Ala Val Leu Pro Pro Gly Phe Arg
    2530                2535                2540

cca cac ttc gag gtg ggc ctg gcc gtg gtg gtg cag gac cag ctg gga   7680
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Pro His Phe Glu Val Gly Leu Ala Val Val Val Gln Asp Gln Leu Gly
2545                2550                2555                2560

gcc gct gtg gtc gcc ctc aac agg tct ttg gcc atc acc ctc cca gag   7728
Ala Ala Val Val Ala Leu Asn Arg Ser Leu Ala Ile Thr Leu Pro Glu
                2565                2570                2575

ccc aac ggc agc gca acg ggg ctc aca gtc tgg ctg cac ggg ctc acc   7776
Pro Asn Gly Ser Ala Thr Gly Leu Thr Val Trp Leu His Gly Leu Thr
            2580                2585                2590

gct agt gtg ctc cca ggg ctg ctg cgg cag gcc gat ccc cag cac gtc   7824
Ala Ser Val Leu Pro Gly Leu Leu Arg Gln Ala Asp Pro Gln His Val
        2595                2600                2605

atc gag tac tcg ttg gcc ctg gtc acc gtg ctg aac gag tac gag cgg   7872
Ile Glu Tyr Ser Leu Ala Leu Val Thr Val Leu Asn Glu Tyr Glu Arg
    2610                2615                2620

gcc ctg gac gtg gcg gca gag ccc aag cac gag cgg cag cac cga gcc   7920
Ala Leu Asp Val Ala Ala Glu Pro Lys His Glu Arg Gln His Arg Ala
2625                2630                2635                2640

cag ata cgc aag aac atc acg gag act ctg gtg tcc ctg agg gtc cac   7968
Gln Ile Arg Lys Asn Ile Thr Glu Thr Leu Val Ser Leu Arg Val His
                2645                2650                2655

act gtg gat gac atc cag cag atc gct gct gcg ctg gcc cag tgc atg   8016
Thr Val Asp Asp Ile Gln Gln Ile Ala Ala Ala Leu Ala Gln Cys Met
            2660                2665                2670

ggg ccc agc agg gag ctc gta tgc cgc tcg tgc ctg aag cag acg ctg   8064
Gly Pro Ser Arg Glu Leu Val Cys Arg Ser Cys Leu Lys Gln Thr Leu
        2675                2680                2685

cac aag ctg gag gcc atg atg ctc atc ctg cag gca gag acc acc gcg   8112
His Lys Leu Glu Ala Met Met Leu Ile Leu Gln Ala Glu Thr Thr Ala
    2690                2695                2700

ggc acc gtg acg ccc acc gcc atc gga gac agc atc ctc aac atc aca   8160
Gly Thr Val Thr Pro Thr Ala Ile Gly Asp Ser Ile Leu Asn Ile Thr
2705                2710                2715                2720

gga gac ctc atc cac ctg gcc agc tcg gac gtg cgg gca cca cag ccc   8208
Gly Asp Leu Ile His Leu Ala Ser Ser Asp Val Arg Ala Pro Gln Pro
                2725                2730                2735

tca gag ctg gga gcc gag tca cca tct cgg atg gtg gcg tcc cag gcc   8256
Ser Glu Leu Gly Ala Glu Ser Pro Ser Arg Met Val Ala Ser Gln Ala
            2740                2745                2750

tac aac ctg acc tct gcc ctc atg cgc atc ctc atg cgc tcc cgc gtg   8304
Tyr Asn Leu Thr Ser Ala Leu Met Arg Ile Leu Met Arg Ser Arg Val
        2755                2760                2765

ctc aac gag gag ccc ctg acg ctg gcg ggc gag gag atc gtg gcc cag   8352
Leu Asn Glu Glu Pro Leu Thr Leu Ala Gly Glu Glu Ile Val Ala Gln
    2770                2775                2780

ggc aag cgc tcg gac ccg cgg agc ctg ctg tgc tat ggc ggc gcc cca   8400
Gly Lys Arg Ser Asp Pro Arg Ser Leu Leu Cys Tyr Gly Gly Ala Pro
2785                2790                2795                2800

ggg cct ggc tgc cac ttc tcc atc ccc gag gct ttc agc ggg gcc ctg   8448
Gly Pro Gly Cys His Phe Ser Ile Pro Glu Ala Phe Ser Gly Ala Leu
                2805                2810                2815
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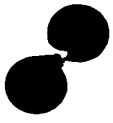

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gcc aac ctc agt gac gtg gtg cag ctc atc ttt ctg gtg gac tcc aat   8496
Ala Asn Leu Ser Asp Val Val Gln Leu Ile Phe Leu Val Asp Ser Asn
            2820                2825                2830

ccc ttt ccc ttt ggc tat atc agc aac tac acc gtc tcc acc aag gtg   8544
Pro Phe Pro Phe Gly Tyr Ile Ser Asn Tyr Thr Val Ser Thr Lys Val
        2835                2840                2845

gcc tgg atg gca ttc cag aca cag gcc ggc gcc cag atc ccc atc gag   8592
Ala Ser Met Ala Phe Gln Thr Gln Ala Gly Ala Gln Ile Pro Ile Glu
    2850                2855                2860

cgg ctg gcc tca gag cgc gcc atc acc gtg aag gtg ccc aac aac tcg   8640
Arg Leu Ala Ser Glu Arg Ala Ile Thr Val Lys Val Pro Asn Asn Ser
2865                2870                2875                2880

gac tgg gct gcc cgg ggc cac cgc agc tcc gcc aac tcc gcc aac tcc   8688
Asp Trp Ala Ala Arg Gly His Arg Ser Ser Ala Asn Ser Ala Asn Ser
                2885                2890                2895

gtt gtg gtc cag ccc cag gcc tcc gtc ggt gct gtg gtc acc ctg gac   8736
Val Val Val Gln Pro Gln Ala Ser Val Gly Ala Val Val Thr Leu Asp
            2900                2905                2910

agc agc aac cct gcg gcc ggg ctg cat ctg cag ctc aac tat acg ctg   8784
Ser Ser Asn Pro Ala Ala Gly Leu His Leu Gln Leu Asn Tyr Thr Leu
        2915                2920                2925

ctg gac ggc cac tac ctg tct gag gaa cct gag ccc tac ctg gca gtc   8832
Leu Asp Gly His Tyr Leu Ser Glu Glu Pro Glu Pro Tyr Leu Ala Val
    2930                2935                2940

tac cta cac tcg gag ccc cgg ccc aat gag cac aac tgc tcg gct agc   8880
Tyr Leu His Ser Glu Pro Arg Pro Asn Glu His Asn Cys Ser Ala Ser
2945                2950                2955                2960

agg agg atc cgc cca gag tca ctc cag ggt gct gac cac cgg ccc tac   8928
Arg Arg Ile Arg Pro Glu Ser Leu Gln Gly Ala Asp His Arg Pro Tyr
                2965                2970                2975

acc ttc ttc att tcc ccg ggg agc aga gac cca gcg ggg agt tac cat   8976
Thr Phe Phe Ile Ser Pro Gly Ser Arg Asp Pro Ala Gly Ser Tyr His
            2980                2985                2990

ctg aac ctc tcc agc cac ttc cgc tgg tcg gcg ctg cag gtg tcc gtg   9024
Leu Asn Leu Ser Ser His Phe Arg Trp Ser Ala Leu Gln Val Ser Val
        2995                3000                3005

ggc ctg tac acg tcc ctg tgc cag tac ttc agc gag gag gac atg gtg   9072
Gly Leu Tyr Thr Ser Leu Cys Gln Tyr Phe Ser Glu Glu Asp Met Val
    3010                3015                3020

tgg cgg aca gag ggg ctg ctg ccc ctg gag gag acc tcg ccc cgc cag   9120
Trp Arg Thr Glu Gly Leu Leu Pro Leu Glu Glu Thr Ser Pro Arg Gln
3025                3030                3035                3040

gcc gtc tgc ctc acc cgc cac ctc acc gcc ttc ggc gcc agc ctc ttc   9168
Ala Val Cys Leu Thr Arg His Leu Thr Ala Phe Gly Ala Ser Leu Phe
                3045                3050                3055

gtg ccc cca agc cat gtc cgc ttt gtg ttt cct gag ccg aca gcg gat   9216
Val Pro Pro Ser His Val Arg Phe Val Phe Pro Glu Pro Thr Ala Asp
            3060                3065                3070

gta aac tac atc gtc atg ctg aca tgt gct gtg tgc ctg gtg acc tac   9264
Val Asn Tyr Ile Val Met Leu Thr Cys Ala Val Cys Leu Val Thr Tyr
        3075                3080                3085
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atg gtc atg gcc gcc atc ctg cac aag ctg gac cag ttg gat gcc agc   9312
Met Val Met Ala Ala Ile Leu His Lys Leu Asp Gln Leu Asp Ala Ser
    3090                3095                3100

cgg ggc cgc gcc atc cct ttc tgt ggg cag cgg ggc cgc ttc aag tac   9360
Arg Gly Arg Ala Ile Pro Phe Cys Gly Gln Arg Gly Arg Phe Lys Tyr
3105                3110                3115                3120

gag atc ctc gtc aag acg ggc tgg ggc cgg ggc tca ggt acc acg gcc   9408
Glu Ile Leu Val Lys Thr Gly Trp Gly Arg Gly Ser Gly Thr Thr Ala
                3125                3130                3135

cac gtg ggc atc atg ctg tat ggg gtg gac agc cgg agc ggc cac cgg   9456
His Val Gly Ile Met Leu Tyr Gly Val Asp Ser Arg Ser Gly His Arg
            3140                3145                3150

cac ctg gac ggc gac aga gcc ttc cac cgc aac agc ctg gac atc ttc   9504
His Leu Asp Gly Asp Arg Ala Phe His Arg Asn Ser Leu Asp Ile Phe
        3155                3160                3165

cgg atc gcc acc ccg cac agc ctg ggt agc gtg tgg aag atc cga gtg   9552
Arg Ile Ala Thr Pro His Ser Leu Gly Ser Val Trp Lys Ile Arg Val
    3170                3175                3180

tgg cac gac aac aaa ggg ctc agc cct gcc tgg ttc ctg cag cac gtc   9600
Trp His Asp Asn Lys Gly Leu Ser Pro Ala Trp Phe Leu Gln His Val
3185                3190                3195                3200

atc gtc agg gac ctg cag acg gca cgc agc gcc ttc ttc ctg gtc aat   9648
Ile Val Arg Asp Leu Gln Thr Ala Arg Ser Ala Phe Phe Leu Val Asn
                3205                3210                3215

gac tgg ctt tcg gtg gag acg gag gcc aac ggg ggc ctg gtg gag aag   9696
Asp Trp Leu Ser Val Glu Thr Glu Ala Asn Gly Gly Leu Val Glu Lys
            3220                3225                3230

gag gtg ctg gcc gcg agc gac gca gcc ctt ttg cgc ttc cgg cgc ctg   9744
Glu Val Leu Ala Ala Ser Asp Ala Ala Leu Leu Arg Phe Arg Arg Leu
        3235                3240                3245

ctg gtg gct gag ctg cag cgt ggc ttc ttt gac aag cac atc tgg ctc   9792
Leu Val Ala Glu Leu Gln Arg Gly Phe Phe Asp Lys His Ile Trp Leu
    3250                3255                3260

tcc ata tgg gac cgg ccg cct cgt agc cgt ttc act cgc atc cag agg   9840
Ser Ile Trp Asp Arg Pro Pro Arg Ser Arg Phe Thr Arg Ile Gln Arg
3265                3270                3275                3280

gcc acc tgc tgc gtt ctc ctc atc tgc ctc ttc ctg ggc gcc aac gcc   9888
Ala Thr Cys Cys Val Leu Leu Ile Cys Leu Phe Leu Gly Ala Asn Ala
                3285                3290                3295

gtg tgg tac ggg gct gtt ggc gac tct gcc tac agc acg ggg cat gtg   9936
Val Trp Tyr Gly Ala Val Gly Asp Ser Ala Tyr Ser Thr Gly His Val
            3300                3305                3310

tcc agg ctg agc ccg ctg agc gtc gac aca gtc gct gtt ggc ctg gtg   9984
Ser Arg Leu Ser Pro Leu Ser Val Asp Thr Val Ala Val Gly Leu Val
        3315                3320                3325

tcc agc gtg gtt gtc tat ccc gtc tac ctg gcc atc ctt ttt ctc ttc   10032
Ser Ser Val Val Val Tyr Pro Val Tyr Leu Ala Ile Leu Phe Leu Phe
    3330                3335                3340

cgg atg tcc cgg agc aag gtg gct ggg agc ccg agc ccc aca cct gcc   10080
Arg Met Ser Arg Ser Lys Val Ala Gly Ser Pro Ser Pro Thr Pro Ala
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3345                3350                3355                3360

ggg cag cag gtg ctg gac atc gac agc tgc ctg gac tcg tcc gtg ctg   10128
Gly Gln Gln Val Leu Asp Ile Asp Ser Cys Leu Asp Ser Ser Val Leu
                3365                3370                3375

gac agc tcc ttc ctc acg ttc tca ggc ctt cac gct gag cag gcc ttt   10176
Asp Ser Ser Phe Leu Thr Phe Ser Gly Leu His Ala Glu Gln Ala Phe
            3380                3385                3390

gtt gga cag atg aag agt gac ttg ttt ctg gat gat tct aag agt ctg   10224
Val Gly Gln Met Lys Ser Asp Leu Phe Leu Asp Asp Ser Lys Ser Leu
        3395                3400                3405

gtg tgc tgg ccc tcc ggc gag gga acg ctt agt tgg ccg gac ctg ctc   10272
Val Cys Trp Pro Ser Gly Glu Gly Thr Leu Ser Trp Pro Asp Leu Leu
    3410                3415                3420

agt gac ccg tcc att gtg ggt agc aat ctg cgg cag ctg gca cgg ggc   10320
Ser Asp Pro Ser Ile Val Gly Ser Asn Leu Arg Gln Leu Ala Arg Gly
3425                3430                3435                3440

cag gcg ggc cat ggg ctg ggc cca gag gag gac ggc ttc tcc ctg gcc   10368
Gln Ala Gly His Gly Leu Gly Pro Glu Glu Asp Gly Phe Ser Leu Ala
                3445                3450                3455

agc ccc tac tcg cct gcc aaa tcc ttc tca gca tca gat gaa gac ctg   10416
Ser Pro Tyr Ser Pro Ala Lys Ser Phe Ser Ala Ser Asp Glu Asp Leu
            3460                3465                3470

atc cag cag gtc ctt gcc gag ggg gtc agc agc cca gcc cct acc caa   10464
Ile Gln Gln Val Leu Ala Glu Gly Val Ser Ser Pro Ala Pro Thr Gln
        3475                3480                3485

gac acc cac atg gaa acg gac ctg ctc agc agc ctg tcc agc act cct   10512
Asp Thr His Met Glu Thr Asp Leu Leu Ser Ser Leu Ser Ser Thr Pro
    3490                3495                3500

ggg gag aag aca gag acg ctg gcg ctg cag agg ctg ggg gag ctg ggg   10560
Gly Glu Lys Thr Glu Thr Leu Ala Leu Gln Arg Leu Gly Glu Leu Gly
3505                3510                3515                3520

cca ccc agc cca ggc ctg aac tgg gaa cag ccc cag gca gcg agg ctg   10608
Pro Pro Ser Pro Gly Leu Asn Trp Glu Gln Pro Gln Ala Ala Arg Leu
                3525                3530                3535

tcc agg aca gga ctg gtg gag ggt ctg cgg aag cgc ctg ctg ccg gcc   10656
Ser Arg Thr Gly Leu Val Glu Gly Leu Arg Lys Arg Leu Leu Pro Ala
            3540                3545                3550

tgg tgt gcc tcc ctg gcc cac ggg ctc agc ctg ctc ctg gtg gct gtg   10704
Trp Cys Ala Ser Leu Ala His Gly Leu Ser Leu Leu Leu Val Ala Val
        3555                3560                3565

gct gtg gct gtc tca ggg tgg gtg ggt gcg agc ttc ccc ccg ggc gtg   10752
Ala Val Ala Val Ser Gly Trp Val Gly Ala Ser Phe Pro Pro Gly Val
    3570                3575                3580

agt gtt gcg tgg ctc ctg tcc agc agc gcc agc ttc ctg gcc tca ttc   10800
Ser Val Ala Trp Leu Leu Ser Ser Ser Ala Ser Phe Leu Ala Ser Phe
3585                3590                3595                3600

ctc ggc tgg gag cca ctg aag gtc ttg ctg gaa gcc ctg tac ttc tca   10848
Leu Gly Trp Glu Pro Leu Lys Val Leu Leu Glu Ala Leu Tyr Phe Ser
                3605                3610                3615

ctg gtg gcc aag cgg ctg cac ccg gat gaa gat gac acc ctg gta gag   10896
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Leu Val Ala Lys Arg Leu His Pro Asp Glu Asp Asp Thr Leu Val Glu
3620 3625 3630

agc ccg gct gtg acg cct gtg agc gca cgt gtg ccc cgc gta cgg cca 10944
Ser Pro Ala Val Thr Pro Val Ser Ala Arg Val Pro Arg Val Arg Pro
3635 3640 3645

ccc cac ggc ttt gca ctc ttc ctg gcc aag gaa gaa gcc cgc aag gtc 10992
Pro His Gly Phe Ala Leu Phe Leu Ala Lys Glu Glu Ala Arg Lys Val
3650 3655 3660

aag agg cta cat ggc atg ctg cgg agc ctc ctg gtg tac atg ctt ttt 11040
Lys Arg Leu His Gly Met Leu Arg Ser Leu Leu Val Tyr Met Leu Phe
3665 3670 3675 3680

ctg ctg gtg acc ctg ctg gcc agc tat ggg gat gcc tca tgc cat ggg 11088
Leu Leu Val Thr Leu Leu Ala Ser Tyr Gly Asp Ala Ser Cys His Gly
3685 3690 3695

cac gcc tac cgt ctg caa agc gcc atc aag cag gag ctg cac agc cgg 11136
His Ala Tyr Arg Leu Gln Ser Ala Ile Lys Gln Glu Leu His Ser Arg
3700 3705 3710

gcc ttc ctg gcc atc acg cgg tct gag gag ctc tgg cca tgg atg gcc 11184
Ala Phe Leu Ala Ile Thr Arg Ser Glu Glu Leu Trp Pro Trp Met Ala
3715 3720 3725

cac gtg ctg ctg ccc tac gtc cac ggg aac cag tcc agc cca gag ctg 11232
His Val Leu Leu Pro Tyr Val His Gly Asn Gln Ser Ser Pro Glu Leu
3730 3735 3740

ggg ccc cca cgg ctg cgg cag gtg cgg ctg cag gaa gca ctc tac cca 11280
Gly Pro Pro Arg Leu Arg Gln Val Arg Leu Gln Glu Ala Leu Tyr Pro
3745 3750 3755 3760

gac cct ccc ggc ccc agg gtc cac acg tgc tcg gcc gca gga ggc ttc 11328
Asp Pro Pro Gly Pro Arg Val His Thr Cys Ser Ala Ala Gly Gly Phe
3765 3770 3775

agc acc agc gat tac gac gtt ggc tgg gag agt cct cac aat ggc tcg 11376
Ser Thr Ser Asp Tyr Asp Val Gly Trp Glu Ser Pro His Asn Gly Ser
3780 3785 3790

ggg acg tgg gcc tat tca gcg ccg gat ctg ctg ggg gca tgg tcc tgg 11424
Gly Thr Trp Ala Tyr Ser Ala Pro Asp Leu Leu Gly Ala Trp Ser Trp
3795 3800 3805

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Gly Ser Cys Ala Val Tyr Asp Ser Gly Gly Tyr Val Gln Glu Leu Gly
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ctg agc ctg gag gag agc cgc gac cgg ctg cgc ttc ctg cag ctg cac 11520
Leu Ser Leu Glu Glu Ser Arg Asp Arg Leu Arg Phe Leu Gln Leu His
3825 3830 3835 3840

aac tgg ctg gac aac agg agc cgc gct gtg ttc ctg gag ctc acg cgc 11568
Asn Trp Leu Asp Asn Arg Ser Arg Ala Val Phe Leu Glu Leu Thr Arg
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tac agc ccg gcc gtg ggg ctg cac gcc gcc gtc acg ctg cgc ctc gag 11616
Tyr Ser Pro Ala Val Gly Leu His Ala Ala Val Thr Leu Arg Leu Glu
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ttc ccg gcg gcc ggc cgc gcc ctg gcc gcc ctc agc gtc cgc ccc ttt 11664
Phe Pro Ala Ala Gly Arg Ala Leu Ala Ala Leu Ser Val Arg Pro Phe
3875 3880 3885

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Ala Leu Arg Arg Leu Ser Ala Gly Leu Ser Leu Pro Leu Leu Thr Ser
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gtg tgc ctg ctg ctg ttc gcc gtg cac ttc gcc gtg gcc gag gcc cgt   11760
Val Cys Leu Leu Leu Phe Ala Val His Phe Ala Val Ala Glu Ala Arg
3905                3910                3915                3920

act tgg cac agg gaa ggg cgc tgg cgc gtg ctg cgg ctc gga gcc tgg   11808
Thr Trp His Arg Glu Gly Arg Trp Arg Val Leu Arg Leu Gly Ala Trp
                3925                3930                3935

gcg cgg tgg ctg ctg gtg gcg ctg acg gcg gcc acg gca ctg gta cgc   11856
Ala Arg Trp Leu Leu Val Ala Leu Thr Ala Ala Thr Ala Leu Val Arg
            3940                3945                3950

ctc gcc cag ctg ggt gcc gct gac cgc cag tgg acc cgt ttc gtg cgc   11904
Leu Ala Gln Leu Gly Ala Ala Asp Arg Gln Trp Thr Arg Phe Val Arg
        3955                3960                3965

ggc cgc ccg cgc cgc ttc act agc ttc gac cag gtg gcg cac gtg agc   11952
Gly Arg Pro Arg Arg Phe Thr Ser Phe Asp Gln Val Ala His Val Ser
    3970                3975                3980

tcc gca gcc cgt ggc ctg gcg gcc tcg ctg ctc ttc ctg ctt ttg gtc   12000
Ser Ala Ala Arg Gly Leu Ala Ala Ser Leu Leu Phe Leu Leu Leu Val
3985                3990                3995                4000

aag gct gcc cag cac gta cgc ttc gtg cgc cag tgg tcc gtc ttt ggc   12048
Lys Ala Ala Gln His Val Arg Phe Val Arg Gln Trp Ser Val Phe Gly
                4005                4010                4015

aag aca tta tgc cga gct ctg cca gag ctc ctg ggg gtc acc ttg ggc   12096
Lys Thr Leu Cys Arg Ala Leu Pro Glu Leu Leu Gly Val Thr Leu Gly
            4020                4025                4030

ctg gtg gtg ctc ggg gta gcc tac gcc cag ctg gcc atc ctg ctc gtg   12144
Leu Val Val Leu Gly Val Ala Tyr Ala Gln Leu Ala Ile Leu Leu Val
        4035                4040                4045

tct tcc tgt gtg gac tcc ctc tgg agc gtg gcc cag gcc ctg ttg gtg   12192
Ser Ser Cys Val Asp Ser Leu Trp Ser Val Ala Gln Ala Leu Leu Val
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ctg tgc cct ggg act ggg ctc tct acc ctg tgt cct gcc gag tcc tgg   12240
Leu Cys Pro Gly Thr Gly Leu Ser Thr Leu Cys Pro Ala Glu Ser Trp
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cac ctg tca ccc ctg ctg tgt gtg ggg ctc tgg gca ctg cgg ctg tgg   12288
His Leu Ser Pro Leu Leu Cys Val Gly Leu Trp Ala Leu Arg Leu Trp
                4085                4090                4095

ggc gcc cta cgg ctg ggg gct gtt att ctc cgc tgg cgc tac cac gcc   12336
Gly Ala Leu Arg Leu Gly Ala Val Ile Leu Arg Trp Arg Tyr His Ala
            4100                4105                4110

ttg cgt gga gag ctg tac cgg ccg gcc tgg gag ccc cag gac tac gag   12384
Leu Arg Gly Glu Leu Tyr Arg Pro Ala Trp Glu Pro Gln Asp Tyr Glu
        4115                4120                4125

atg gtg gag ttg ttc ctg cgc agg ctg cgc ctc tgg atg ggc ctc agc   12432
Met Val Glu Leu Phe Leu Arg Arg Leu Arg Leu Trp Met Gly Leu Ser
    4130                4135                4140

aag gtc aag gag ttc cgc cac aaa gtc cgc ttt gaa ggg atg gag ccg   12480
Lys Val Lys Glu Phe Arg His Lys Val Arg Phe Glu Gly Met Glu Pro
4145                4150                4155                4160
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ctg ccc tct cgc tcc tcc agg ggc tcc aag gta tcc ccg gat gtg ccc   12528
Leu Pro Ser Arg Ser Ser Arg Gly Ser Lys Val Ser Pro Asp Val Pro
                4165                4170                4175

cca ccc agc gct ggc tcc gat gcc tcg cac ccc tcc acc tcc tcc agc   12576
Pro Pro Ser Ala Gly Ser Asp Ala Ser His Pro Ser Thr Ser Ser Ser
            4180                4185                4190

cag ctg gat ggg ctg agc gtg agc ctg ggc cgg ctg ggg aca agg tgt   12624
Gln Leu Asp Gly Leu Ser Val Ser Leu Gly Arg Leu Gly Thr Arg Cys
        4195                4200                4205

gag cct gag ccc tcc cgc ctc caa gcc gtg ttc gag gcc ctg ctc acc   12672
Glu Pro Glu Pro Ser Arg Leu Gln Ala Val Phe Glu Ala Leu Leu Thr
    4210                4215                4220

cag ttt gac cga ctc aac cag gcc aca gag gac gtc tac cag ctg gag   12720
Gln Phe Asp Arg Leu Asn Gln Ala Thr Glu Asp Val Tyr Gln Leu Glu
4225                4230                4235                4240

cag cag ctg cac agc ctg caa ggc cgc agg agc agc cgg gcg ccc gcc   12768
Gln Gln Leu His Ser Leu Gln Gly Arg Arg Ser Ser Arg Ala Pro Ala
                4245                4250                4255

gga tct tcc cgt ggc cca tcc ccg ggc ctg cgg cca gca ctg ccc agc   12816
Gly Ser Ser Arg Gly Pro Ser Pro Gly Leu Arg Pro Ala Leu Pro Ser
            4260                4265                4270

cgc ctt gcc cgg gcc agt cgg ggt gtg gac ctg gcc act ggc ccc agc   12864
Arg Leu Ala Arg Ala Ser Arg Gly Val Asp Leu Ala Thr Gly Pro Ser
        4275                4280                4285

agg aca ccc ctt cgg gcc aag aac aag gtc cac ccc agc agc act tag   12912
Arg Thr Pro Leu Arg Ala Lys Asn Lys Val His Pro Ser Ser Thr
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<212> PRT
<213> Homo sapiens PKD-1 protein

<400> 2

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Leu Trp Leu Gly Ala Leu Ala Gly Gly Pro Gly Arg Gly Cys Gly Pro
             20                  25                  30

Cys Glu Pro Pro Cys Leu Cys Gly Pro Ala Pro Gly Ala Ala Cys Arg
         35                  40                  45

Val Asn Cys Ser Gly Arg Gly Leu Arg Thr Leu Gly Pro Ala Leu Arg
     50                  55                  60

Ile Pro Ala Asp Ala Thr Glu Leu Asp Val Ser His Asn Leu Leu Arg
 65                  70                  75                  80

Ala Leu Asp Val Gly Leu Leu Ala Asn Leu Ser Ala Leu Ala Glu Leu
                 85                  90                  95

Asp Ile Ser Asn Asn Lys Ile Ser Thr Leu Glu Glu Gly Ile Phe Ala
            100                 105                 110

Asn Leu Phe Asn Leu Ser Glu Ile Asn Leu Ser Gly Asn Pro Phe Glu
        115                 120                 125
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Cys Asp Cys Gly Leu Ala Trp Leu Pro Gln Trp Ala Glu Glu Gln Gln
130 135 140

Val Arg Val Val Gln Pro Glu Ala Ala Thr Cys Ala Gly Pro Gly Ser
145 150 155 160

Leu Ala Gly Gln Pro Leu Leu Gly Ile Pro Leu Leu Asp Ser Gly Cys
165 170 175

Gly Glu Glu Tyr Val Ala Cys Leu Pro Asp Asn Ser Ser Gly Thr Val
180 185 190

Ala Ala Val Ser Phe Ser Ala Ala His Glu Gly Leu Leu Gln Pro Glu
195 200 205

Ala Cys Ser Ala Phe Cys Phe Ser Thr Gly Gln Gly Leu Ala Ala Leu
210 215 220

Ser Glu Gln Gly Trp Cys Leu Cys Gly Ala Ala Gln Pro Ser Ser Ala
225 230 235 240

Ser Phe Ala Cys Leu Ser Leu Cys Ser Gly Pro Pro Ala Pro Pro Ala
245 250 255

Pro Thr Cys Arg Gly Pro Thr Leu Leu Gln His Val Phe Pro Ala Ser
260 265 270

Pro Gly Ala Thr Leu Val Gly Pro His Gly Pro Leu Ala Ser Gly Gln
275 280 285

Leu Ala Ala Phe His Ile Ala Ala Pro Leu Pro Val Thr Asp Thr Arg
290 295 300

Trp Asp Phe Gly Asp Gly Ser Ala Glu Val Asp Ala Ala Gly Pro Ala
305 310 315 320

Ala Ser His Arg Tyr Val Leu Pro Gly Arg Tyr His Val Thr Ala Val
325 330 335

Leu Ala Leu Gly Ala Gly Ser Ala Leu Leu Gly Thr Asp Val Gln Val
340 345 350

Glu Ala Ala Pro Ala Ala Leu Glu Leu Val Cys Pro Ser Ser Val Gln
355 360 365

Ser Asp Glu Ser Leu Asp Leu Ser Ile Gln Asn Arg Gly Gly Ser Gly
370 375 380

Leu Glu Ala Ala Tyr Ser Ile Val Ala Leu Gly Glu Glu Pro Ala Arg
385 390 395 400

Ala Val His Pro Leu Cys Pro Ser Asp Thr Glu Ile Phe Pro Gly Asn
405 410 415

Gly His Cys Tyr Arg Leu Val Val Glu Lys Ala Ala Trp Leu Gln Ala
420 425 430

Gln Glu Gln Cys Gln Ala Trp Ala Gly Ala Ala Leu Ala Met Val Asp
435 440 445

Ser Pro Ala Val Gln Arg Phe Leu Val Ser Arg Val Thr Arg Ser Leu
450 455 460

Asp Val Trp Ile Gly Phe Ser Thr Val Gln Gly Val Glu Val Gly Pro
465 470 475 480


Ala Pro Gln Gly Glu Ala Phe Ser Leu Glu Ser Cys Gln Asn Trp Leu
485 490 495

Pro Gly Glu Pro His Pro Ala Thr Ala Gln His Cys Val Arg Leu Gly
500 505 510

Pro Thr Gly Trp Cys Asn Thr Asp Leu Cys Ser Ala Pro His Ser Tyr
515 520 525

Val Cys Glu Leu Gln Pro Gly Gly Pro Val Gln Asp Ala Glu Asn Leu
530 535 540

Leu Val Gly Ala Pro Ser Gly Asp Leu Gln Gly Pro Leu Thr Pro Leu
545 550 555 560

Ala Gln Gln Asp Gly Leu Ser Ala Pro His Glu Pro Val Glu Val Met
565 570 575

Val Phe Pro Gly Leu Arg Leu Ser Arg Glu Ala Phe Leu Thr Thr Ala
580 585 590

Glu Phe Gly Thr Gln Glu Leu Arg Arg Pro Ala Gln Leu Arg Leu Gln
595 600 605

Val Tyr Arg Leu Leu Ser Thr Ala Gly Thr Pro Glu Asn Gly Ser Glu
610 615 620

Pro Glu Ser Arg Ser Pro Asp Asn Arg Thr Gln Leu Ala Pro Ala Cys
625 630 635 640

Met Pro Gly Gly Arg Trp Cys Pro Gly Ala Asn Ile Cys Leu Pro Leu
645 650 655

Asp Ala Ser Cys His Pro Gln Ala Cys Ala Asn Gly Cys Thr Ser Gly
660 665 670

Pro Gly Leu Pro Gly Ala Pro Tyr Ala Leu Trp Arg Glu Phe Leu Phe
675 680 685

Ser Val Pro Ala Gly Pro Pro Ala Gln Tyr Ser Val Thr Leu His Gly
690 695 700

Gln Asp Val Leu Met Leu Pro Gly Asp Leu Val Gly Leu Gln His Asp
705 710 715 720

Ala Gly Pro Gly Ala Leu Leu His Cys Ser Pro Ala Pro Gly His Pro
725 730 735

Gly Pro Arg Ala Pro Tyr Leu Ser Ala Asn Ala Ser Ser Trp Leu Pro
740 745 750

His Leu Pro Ala Gln Leu Glu Gly Thr Trp Gly Cys Pro Ala Cys Ala
755 760 765

Leu Arg Leu Leu Ala Gln Arg Glu Gln Leu Thr Val Leu Leu Gly Leu
770 775 780

Arg Pro Asn Pro Gly Leu Arg Leu Pro Gly Arg Tyr Glu Val Arg Ala
785 790 795 800

Glu Val Gly Asn Gly Val Ser Arg His Asn Leu Ser Cys Ser Phe Asp
805 810 815

Val Val Ser Pro Val Ala Gly Leu Arg Val Ile Tyr Pro Ala Pro Arg
820 825 830

Asp Gly Arg Leu Tyr Val Pro Thr Asn Gly Ser Ala Leu Val Leu Gln


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        835                 840                 845

Val Asp Ser Gly Ala Asn Ala Thr Ala Thr Ala Arg Trp Pro Gly Gly
     850                 855                 860

Ser Leu Ser Ala Arg Phe Glu Asn Val Cys Pro Ala Leu Val Ala Thr
865                 870                 875                 880

Phe Val Pro Ala Cys Pro Trp Glu Thr Asn Asp Thr Leu Phe Ser Val
                885                 890                 895

Val Ala Leu Pro Trp Leu Ser Glu Gly Glu His Val Val Asp Val Val
            900                 905                 910

Val Glu Asn Ser Ala Ser Arg Ala Asn Leu Ser Leu Arg Val Thr Ala
        915                 920                 925

Glu Glu Pro Ile Cys Gly Leu Arg Ala Thr Pro Ser Pro Glu Ala Arg
    930                 935                 940

Val Leu Gln Gly Val Leu Val Arg Tyr Ser Pro Val Val Glu Ala Gly
945                 950                 955                 960

Ser Asp Met Val Phe Arg Trp Thr Ile Asn Asp Lys Gln Ser Leu Thr
                965                 970                 975

Phe Gln Asn Val Val Phe Asn Val Ile Tyr Gln Ser Ala Ala Val Phe
            980                 985                 990

Lys Leu Ser Leu Thr Ala Ser Asn His Val Ser Asn Val Thr Val Asn
        995                1000                1005

Tyr Asn Val Thr Val Glu Arg Met Asn Arg Met Gln Gly Leu Gln Val
   1010                1015                1020

Ser Thr Val Pro Ala Val Leu Ser Pro Asn Ala Thr Leu Ala Leu Thr
025                1030                1035                1040

Ala Gly Val Leu Val Asp Ser Ala Val Glu Val Ala Phe Leu Trp Thr
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Phe Gly Asp Gly Glu Gln Ala Leu His Gln Phe Gln Pro Pro Tyr Asn
           1060                1065                1070

Glu Ser Phe Pro Val Pro Asp Pro Ser Val Ala Gln Val Leu Val Glu
       1075                1080                1085

His Asn Val Thr His Thr Tyr Ala Ala Pro Gly Glu Tyr Leu Leu Thr
   1090                1095                1100

Val Leu Ala Ser Asn Ala Phe Glu Asn Leu Thr Gln Gln Val Pro Val
105                1110                1115                1120

Ser Val Arg Ala Ser Leu Pro Ser Val Ala Val Gly Val Ser Asp Gly
               1125                1130                1135

Val Leu Val Ala Gly Arg Pro Val Thr Phe Tyr Pro His Pro Leu Pro
           1140                1145                1150

Ser Pro Gly Gly Val Leu Tyr Thr Trp Asp Phe Gly Asp Gly Ser Pro
       1155                1160                1165

Val Leu Thr Gln Ser Gln Pro Ala Ala Asn His Thr Tyr Ala Ser Arg
   1170                1175                1180

Gly Thr Tyr His Val Arg Leu Glu Val Asn Asn Thr Val Ser Gly Ala
185                1190                1195                1200
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Val Asp Met Ser Leu Ala Val Glu Gln Gly Ala Pro Val Val Val Ser
1220 1225 1230

Ala Ala Val Gln Thr Gly Asp Asn Ile Thr Trp Thr Phe Asp Met Gly
1235 1240 1245

Asp Gly Thr Val Leu Ser Gly Pro Glu Ala Thr Val Glu His Val Tyr
1250 1255 1260

Leu Arg Ala Gln Asn Cys Thr Val Thr Val Gly Ala Gly Ser Pro Ala
265 1270 1275 1280

Gly His Leu Ala Arg Ser Leu His Val Leu Val Phe Val Leu Glu Val
1285 1290 1295

Leu Arg Val Glu Pro Ala Ala Cys Ile Pro Thr Gln Pro Asp Ala Arg
1300 1305 1310

Leu Thr Ala Tyr Val Thr Gly Asn Pro Ala His Tyr Leu Phe Asp Trp
1315 1320 1325

Thr Phe Gly Asp Gly Ser Ser Asn Thr Thr Val Arg Gly Cys Pro Thr
1330 1335 1340

Val Thr His Asn Phe Thr Arg Ser Gly Thr Phe Pro Leu Ala Leu Val
345 1350 1355 1360

Leu Ser Ser Arg Val Asn Arg Ala His Tyr Phe Thr Ser Ile Cys Val
1365 1370 1375

Glu Pro Glu Val Gly Asn Val Thr Leu Gln Pro Glu Arg Gln Phe Val
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Gln Leu Gly Asp Glu Ala Trp Leu Val Ala Cys Ala Trp Pro Pro Phe
1395 1400 1405

Pro Tyr Arg Tyr Thr Trp Asp Phe Gly Thr Glu Glu Ala Ala Pro Thr
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Arg Ala Arg Gly Pro Glu Val Thr Phe Ile Tyr Arg Asp Pro Gly Ser
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Tyr Leu Val Thr Val Thr Ala Ser Asn Asn Ile Ser Ala Ala Asn Asp
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Ser Ala Leu Val Glu Val Gln Glu Pro Val Leu Val Thr Ser Ile Lys
1460 1465 1470

Val Asn Gly Ser Leu Gly Leu Glu Leu Gln Gln Pro Tyr Leu Phe Ser
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Ala Val Gly Arg Gly Arg Pro Ala Ser Tyr Leu Trp Asp Leu Gly Asp
1490 1495 1500

Gly Gly Trp Leu Glu Gly Pro Glu Val Thr His Ala Tyr Asn Ser Thr
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Gly Asp Phe Thr Val Arg Val Ala Gly Trp Asn Glu Val Ser Arg Ser
1525 1530 1535

Glu Ala Trp Leu Asn Val Thr Val Lys Arg Arg Val Arg Gly Leu Val
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Val Asn Ala Ser Arg Thr Val Val Pro Leu Asn Gly Ser Val Ser Phe
1555 1560 1565

Ser Thr Ser Leu Glu Ala Gly Ser Asp Val Arg Tyr Ser Trp Val Leu
1570 1575 1580

Cys Asp Arg Cys Thr Pro Ile Pro Gly Gly Pro Thr Ile Ser Tyr Thr
585 1590 1595 1600

Phe Arg Ser Val Gly Thr Phe Asn Ile Ile Val Thr Ala Glu Asn Glu
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Val Gly Ser Ala Gln Asp Ser Ile Phe Val Tyr Val Leu Gln Leu Ile
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Glu Gly Leu Gln Val Val Gly Gly Gly Arg Tyr Phe Pro Thr Asn His
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Thr Val Gln Leu Gln Ala Val Val Arg Asp Gly Thr Asn Val Ser Tyr
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Ser Trp Thr Ala Trp Arg Asp Arg Gly Pro Ala Leu Ala Gly Ser Gly
665 1670 1675 1680

Lys Gly Phe Ser Leu Thr Val Leu Glu Ala Gly Thr Tyr His Val Gln
1685 1690 1695

Leu Arg Ala Thr Asn Met Leu Gly Ser Ala Trp Ala Asp Cys Thr Met
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Asp Phe Val Glu Pro Val Gly Trp Leu Met Val Ala Ala Ser Pro Asn
1715 1720 1725

Pro Ala Ala Val Asn Thr Ser Val Thr Leu Ser Ala Glu Leu Ala Gly
1730 1735 1740

Gly Ser Gly Val Val Tyr Thr Trp Ser Leu Glu Glu Gly Leu Ser Trp
745 1750 1755 1760

Glu Thr Ser Glu Pro Phe Thr Thr His Ser Phe Pro Thr Pro Gly Leu
1765 1770 1775

His Leu Val Thr Met Thr Ala Gly Asn Pro Leu Gly Ser Ala Asn Ala
1780 1785 1790

Thr Val Glu Val Asp Val Gln Val Pro Val Ser Gly Leu Ser Ile Arg
1795 1800 1805

Ala Ser Glu Pro Gly Gly Ser Phe Val Ala Ala Gly Ser Ser Val Pro
1810 1815 1820

Phe Trp Gly Gln Leu Ala Thr Gly Thr Asn Val Ser Trp Cys Trp Ala
825 1830 1835 1840

Val Pro Gly Gly Ser Ser Lys Arg Gly Pro His Val Thr Met Val Phe
1845 1850 1855

Pro Asp Ala Gly Thr Phe Ser Ile Arg Leu Asn Ala Ser Asn Ala Val
1860 1865 1870

Ser Trp Val Ser Ala Thr Tyr Asn Leu Thr Ala Glu Glu Pro Ile Val
1875 1880 1885

Gly Leu Val Leu Trp Ala Ser Ser Lys Val Val Ala Pro Gly Gln Leu
1890 1895 1900

Val His Phe Gln Ile Leu Leu Ala Ala Gly Ser Ala Val Thr Phe Arg


1905 1910 1915 1920

Leu Gln Val Gly Gly Ala Asn Pro Glu Val Leu Pro Gly Pro Arg Phe
1925 1930 1935

Ser His Ser Phe Pro Arg Val Gly Asp His Val Val Ser Val Arg Gly
1940 1945 1950

Lys Asn His Val Ser Trp Ala Gln Ala Gln Val Arg Ile Val Val Leu
1955 1960 1965

Glu Ala Val Ser Gly Leu Gln Val Pro Asn Cys Cys Glu Pro Gly Ile
1970 1975 1980

Ala Thr Gly Thr Glu Arg Asn Phe Thr Ala Arg Val Gln Arg Gly Ser
1985 1990 1995 2000

Arg Val Ala Tyr Ala Trp Tyr Phe Ser Leu Gln Lys Val Gln Gly Asp
2005 2010 2015

Ser Leu Val Ile Leu Ser Gly Arg Asp Val Thr Tyr Thr Pro Val Ala
2020 2025 2030

Ala Gly Leu Leu Glu Ile Gln Val Arg Ala Phe Asn Ala Leu Gly Ser
2035 2040 2045

Glu Asn Arg Thr Leu Val Leu Glu Val Gln Asp Ala Val Gln Tyr Val
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Ala Leu Gln Ser Gly Pro Cys Phe Thr Asn Arg Ser Ala Gln Phe Glu
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Ala Ala Thr Ser Pro Ser Pro Arg Arg Val Ala Tyr His Trp Asp Phe
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Gly Asp Gly Ser Pro Gly Gln Asp Thr Asp Glu Pro Arg Ala Glu His
2100 2105 2110

Ser Tyr Leu Arg Pro Gly Asp Tyr Arg Val Gln Val Asn Ala Ser Asn
2115 2120 2125

Leu Val Ser Phe Phe Val Ala Gln Ala Thr Val Thr Val Gln Val Leu
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Ala Cys Arg Glu Pro Glu Val Asp Val Val Leu Pro Leu Gln Val Leu
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Met Arg Arg Ser Gln Arg Asn Tyr Leu Glu Ala His Val Asp Leu Arg
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Asp Cys Val Thr Tyr Gln Thr Glu Tyr Arg Trp Glu Val Tyr Arg Thr
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Ala Ser Cys Gln Arg Pro Gly Arg Pro Ala Arg Val Ala Leu Pro Gly
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Val Asp Val Ser Arg Pro Arg Leu Val Leu Pro Arg Leu Ala Leu Pro
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Val Gly His Tyr Cys Phe Val Phe Val Val Ser Phe Gly Asp Thr Pro
2225 2230 2235 2240

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2245 2250 2255

Val Pro Ile Ile Glu Gly Gly Ser Tyr Arg Val Trp Ser Asp Thr Arg
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Asp Leu Val Leu Asp Gly Ser Glu Ser Tyr Asp Pro Asn Leu Glu Asp
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Ser Thr Val Thr Ile Pro Arg Glu Arg Leu Ala Ala Gly Val Glu Tyr
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Lys Arg Gly Arg Trp Ala Ala Arg Thr Phe Ser Asn Lys Thr Leu Val
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Gly Trp His Asp Ala Glu Asp Ala Gly Ala Pro Leu Val Tyr Ala Leu
2500 2505 2510

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Lys Gly Ser Leu Ser Ser Tyr Gly Ala Val Leu Pro Pro Gly Phe Arg
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Gln Ile Arg Lys Asn Ile Thr Glu Thr Leu Val Ser Leu Arg Val His
2645 2650 2655

Thr Val Asp Asp Ile Gln Gln Ile Ala Ala Ala Leu Ala Gln Cys Met
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Gly Pro Ser Arg Glu Leu Val Cys Arg Ser Cys Leu Lys Gln Thr Leu
2675 2680 2685

His Lys Leu Glu Ala Met Met Leu Ile Leu Gln Ala Glu Thr Thr Ala
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Gly Thr Val Thr Pro Thr Ala Ile Gly Asp Ser Ile Leu Asn Ile Thr
705 2710 2715 2720

Gly Asp Leu Ile His Leu Ala Ser Ser Asp Val Arg Ala Pro Gln Pro
2725 2730 2735

Ser Glu Leu Gly Ala Glu Ser Pro Ser Arg Met Val Ala Ser Gln Ala
2740 2745 2750

Tyr Asn Leu Thr Ser Ala Leu Met Arg Ile Leu Met Arg Ser Arg Val
2755 2760 2765

Leu Asn Glu Glu Pro Leu Thr Leu Ala Gly Glu Glu Ile Val Ala Gln
2770 2775 2780

Gly Lys Arg Ser Asp Pro Arg Ser Leu Leu Cys Tyr Gly Gly Ala Pro
785 2790 2795 2800

Gly Pro Gly Cys His Phe Ser Ile Pro Glu Ala Phe Ser Gly Ala Leu
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Ala Asn Leu Ser Asp Val Val Gln Leu Ile Phe Leu Val Asp Ser Asn
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Pro Phe Pro Phe Gly Tyr Ile Ser Asn Tyr Thr Val Ser Thr Lys Val
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Tyr Leu His Ser Glu Pro Arg Pro Asn Glu His Asn Cys Ser Ala Ser
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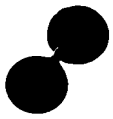

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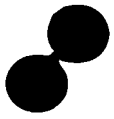

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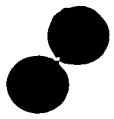

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        35                  40                  45

Lys Ser Asn Phe Phe Val Leu Leu Leu Leu Ala Ile Ser Ala Ile Gln
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Ile Asp Gly Leu His Tyr Gln Leu Leu Asp Gly Ile Ala Thr Phe Arg
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Leu Asp Asn Asp Asp Thr Thr Ile Gly Gly Val Pro Arg Asn Ser Gln
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Gly Val Val Lys Ile Lys Leu Ser Cys Gly Leu Asn Arg Leu Ser Val
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Ile Gln Thr Glu Thr Arg Leu Val Gly Leu Phe Leu Asn Ser Thr Trp
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Glu Ala Lys Tyr Glu Val Cys Tyr Asp Asp Gly Ile Asp Arg Cys Asp
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Gly Ser Leu Trp Trp Leu Gln Val Gly Gly Asn Glu Met Ala Leu Leu
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Gly Tyr Arg Glu Lys Cys Glu Ser Gly Glu Ile Asn Glu Glu Tyr Ala
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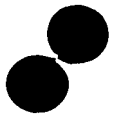

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3105 3110 3115 3120

Val Ala Lys Val Asn Leu Leu His His Arg Ala Thr Arg Met Leu Gln
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Thr Gln Gly Gln Tyr Gln Asn Gln Thr Val Ile Asn Tyr Thr Leu Ser
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Tyr Asp Pro Val Ser Ala Ile His Glu Thr Gly Pro Lys Arg Phe Gln
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Lys Trp Arg Leu Asn Asp Val Glu Lys Asp
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<213> C. Elegans Pkd-2 protein

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His Leu Gln Arg Ile Leu Gln Phe His Ser Asp Glu Ser Ile Leu Met
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Ile Asp Lys Lys Leu Met Ile Ser Gly Gly Leu Glu Pro Pro Thr Phe
     50                  55                  60

Cys Val Leu Asp Arg Cys Asp Asn His Tyr Thr Thr Lys Pro Arg His
 65                  70                  75                  80

Leu Pro Pro Phe Glu Val Phe Leu Phe Val Val Ile Phe Lys Cys Glu
                 85                  90                  95

Pro Ser Ser Met Asn Tyr Gly Ala Ala Asp Glu Arg Trp Ala Asn Pro
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Pro Gln Pro Val Ala Ala Ala Glu His Gly Pro Ser Phe Asp His Ser
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Met Val Ser Glu Glu Tyr Glu His Asp Lys Lys Lys Asn Pro Ala Gln
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Lys Glu Gly Ile Ser Phe Ser Gln Ala Leu Leu Ala Ser Gly His Glu
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Gly Gly Tyr Ala Val Phe Leu Ile Val Leu Val Tyr Val Ala Phe Ala
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Gln Asn Ser Ile Gln Ser Tyr Tyr Tyr Ser Lys Val Met Ser Asp Leu
195 200 205

Phe Val Ala Ser Thr Gly Ala Ser Gly Ala Pro Ala Phe Gly Ser Cys
210 215 220

Thr Ser Met Asp Asn Ile Trp Asp Trp Leu Ser Gln Val Leu Ile Pro
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Gly Ile Tyr Trp Thr Glu Thr Ser Asn Ser Thr Asp Asn Glu Asn Met
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Ile Tyr Tyr Glu Asn Arg Leu Leu Gly Glu Pro Arg Ile Arg Met Leu
260 265 270

Lys Val Thr Asn Asp Ser Cys Thr Val Met Lys Ser Phe Gln Arg Glu
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Ile Lys Glu Cys Phe Ala Asn Tyr Glu Glu Lys Leu Glu Asp Lys Thr
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Met Val Gly Asp Gly Ser Val Asp Ala Phe Ile Tyr Ala Thr Ala Lys
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Glu Leu Glu Asn Leu Lys Thr Val Gly Thr Ile Ala Ser Tyr Gly Gly
325 330 335

Gly Gly Phe Val Gln Arg Leu Pro Val Ala Gly Ser Thr Glu Ala Gln
340 345 350

Ser Ala Ile Ala Thr Leu Lys Ala Asn Arg Trp Ile Asp Arg Gly Ser
355 360 365

Arg Ala Ile Ile Val Asp Phe Ala Leu Tyr Asn Ala Asn Ile Asn Leu
370 375 380

Phe Cys Val Val Lys Leu Leu Phe Glu Leu Pro Ala Ser Gly Gly Val
385 390 395 400

Ile Thr Thr Pro Lys Leu Met Thr Tyr Asp Leu Leu Thr Tyr Gln Thr
405 410 415

Ser Gly Gly Thr Arg Met Met Ile Phe Glu Gly Ile Phe Cys Gly Phe
420 425 430

Ile Leu Tyr Phe Ile Phe Glu Glu Leu Phe Ala Ile Gly Arg His Arg
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Leu His Tyr Leu Thr Gln Phe Trp Asn Leu Val Asp Val Val Leu Leu
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Gly Phe Ser Val Ala Thr Ile Ile Leu Ser Val Asn Arg Thr Lys Thr
465 470 475 480

Gly Val Asn Arg Val Asn Ser Val Ile Glu Asn Gly Leu Thr Asn Ala
485 490 495

Pro Phe Asp Asp Val Thr Ser Ser Glu Asn Ser Tyr Leu Asn Ile Lys
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Ala Cys Val Val Phe Val Ala Trp Val Lys Val Phe Lys Phe Ile Ser

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Val Asn Lys Thr Met Ser Gln Leu Ser Ser Thr Leu Thr Arg Ser Ala
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Lys Asp Ile Gly Gly Phe Ala Val Met Phe Ala Val Phe Phe Phe Ala
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Phe Ala Gln Phe Gly Tyr Leu Cys Phe Gly Thr Gln Ile Ala Asp Tyr
565 570 575

Ser Asn Leu Tyr Asn Ser Ala Phe Ala Leu Leu Arg Leu Ile Leu Gly
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Asp Phe Asn Phe Ser Ala Leu Glu Ser Cys Asn Arg Phe Phe Gly Pro
595 600 605

Ala Phe Phe Ile Ala Tyr Val Phe Phe Val Ser Phe Ile Leu Leu Asn
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Met Phe Leu Ala Ile Ile Asn Asp Ser Tyr Val Glu Val Lys Ala Glu
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Leu Ala Arg Lys Lys Asp Gly Glu Gly Ile Leu Asp Trp Phe Met Asn
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Lys Val Arg Gly Leu Thr Lys Arg Gly Lys Arg Pro Asp Ala Pro Gly
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Glu Asp Ala Thr Tyr Glu Asp Tyr Lys Leu Met Leu Tyr Arg Ala Gly
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Tyr Ala Glu Lys Asp Ile Asn Glu Ala Phe Thr Arg Phe Asn Val Thr
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Ser Met Thr Glu His Val Pro Glu Lys Val Ala Glu Asp Ile Ala Asp
705 710 715 720

Glu Val Ala Arg Met Thr Glu Gln Lys Arg Asn Tyr Met Glu Asn His
725 730 735

Arg Asp Tyr Ala Asn Leu Asn Arg Arg Val Asp Gln Met Gln Glu Ser
740 745 750

Val Phe Ser Ile Val Asp Arg Ile Glu Gly Val Asn Ala Thr Leu Gln
755 760 765

Thr Ile Glu Lys Gln Arg Val Gln Gln Gln Asp Gly Gly Asn Leu Met
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<213> Artificial Sequence

<220>
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Ile Phe Thr Lys Leu Leu Gln Asp Asn Leu Pro Ala His Trp Met Lys
35 40 45

Lys Ser Asn Phe Phe Val Leu Leu Leu Leu Ala Ile Ser Ala Ile Gln
50 55 60

Ile Asp Gly Leu His Tyr Gln Leu Leu Asp Gly Ile Ala Thr Phe Arg
65 70 75 80

Leu Asp Asn Asp Asp Thr Thr Ile Gly Gly Val Pro Arg Asn Ser Gln
85 90 95

Gly Val Val Lys Ile Lys Leu Ser Cys Gly Leu Asn Arg Leu Ser Val
100 105 110

Glu Asn Lys Val Thr Glu Val Ser Ser Leu Glu Leu Ile His Asn Cys
115 120 125

Ile Gln Thr Glu Thr Arg Leu Val Gly Leu Phe Leu Asn Ser Thr Trp
130 135 140

Ile Thr Leu Asn Glu Val Asn Asp Asp Asp Glu Ile Ser Ile Ala Val
145 150 155 160

Glu Ala Lys Tyr Glu Val Cys Tyr Asp Asp Gly Ile Asp Arg Cys Asp


165 170 175

Gly Ser Leu Trp Trp Leu Gln Val Gly Gly Asn Glu Met Ala Leu Leu
180 185 190

Gly Tyr Arg Glu Lys Cys Glu Ser Gly Glu Ile Asn Glu Glu Tyr Ala
195 200 205

Arg Arg Met Cys Lys Arg Pro Tyr Arg Ser Glu Lys Ser Thr Ala Ile
210 215 220

Ser Asp Ser Gln Gly Val Tyr Tyr Asp Gly Gln Val Leu Lys Gly Val
225 230 235 240

Arg Ala Lys Gln Phe Ser Met Arg Thr Ser Gly Ser Pro Thr Leu Arg
245 250 255

Arg Met Lys Arg Asp Ala Gly Asp Asn Thr Cys Asp Tyr Thr Ile Glu
260 265 270

Ser Thr Ser Thr Ser Thr Thr Thr Pro Thr Thr Thr Thr Val Thr Ser
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Glu Ser Thr Ser Thr Thr Phe Thr Ser Thr Ala Ser Thr Ser Thr Ser
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Ser Thr Ser Thr Thr Gln Gln Ser Ser Ser Thr Ile Thr Ser Ser Pro
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Ser Ser Thr Thr Leu Ser Thr Ser Ile Pro Thr Thr Thr Thr Pro Glu
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Ile Thr Ser Thr Leu Ser Ser Leu Pro Asp Asn Ala Ile Cys Ser Tyr
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Thr Ser Thr Ser Pro Ser Ser Thr Val Thr Thr Ser Thr Thr Ala Pro
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Thr Ala Ser Ser Ser Val Ser Ser Thr Ala Ser Ser Thr Gln Ser Ser


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Thr Thr Phe Tyr Asp Ser Thr Ser Val Asn Leu Thr Leu Asn Ser Gly
565 570 575

Leu Gly Ile Ile Gly Tyr Gln Thr Ser Ile Glu Cys Thr Ser Pro Thr
580 585 590

Ser Ser Asn Tyr Val Ser Thr Thr Lys Asp Gly Ala Cys Phe Thr Lys
595 600 605

Ser Val Ser Met Pro Arg Leu Gly Gly Thr Tyr Pro Ala Ser Thr Phe
610 615 620

Val Gly Pro Gly Asn Tyr Thr Phe Arg Ala Thr Met Thr Thr Asp Asp
625 630 635 640

Lys Lys Val Tyr Tyr Thr Tyr Ala Asn Val Tyr Ile Gln Glu Tyr Ser
645 650 655

Ser Thr Thr Ile Glu Ser Glu Ser Ser Thr Ser Ala Val Ala Ser Ser
660 665 670

Thr Ser Ser Thr Pro Ser Thr Pro Ser Ser Thr Leu Ser Thr Ser Thr
675 680 685

Val Thr Glu Pro Ser Ser Thr Arg Ser Ser Asp Ser Thr Thr Thr Ser
690 695 700

Ala Gly Ser Thr Thr Thr Leu Gln Glu Ser Thr Thr Thr Ser Glu Glu
705 710 715 720

Ser Thr Thr Asp Ser Ser Thr Thr Thr Ile Ser Asp Thr Ser Thr Ser
725 730 735

Thr Ser Ser Pro Ser Ser Thr Thr Ala Asp Ser Thr Ser Thr Leu Ser
740 745 750

Val Asp Gln Phe Asp Phe Ile Leu Asp Ser Gly Leu Ser Trp Asn Glu
755 760 765

Thr Arg His Asn Glu Asp Ser Ile Asn Ile Val Pro Leu Pro Thr Asn
770 775 780

Ala Ile Thr Pro Thr Glu Arg Ser Gln Thr Phe Glu Cys Arg Asn Val
785 790 795 800

Ser Thr Glu Pro Phe Leu Ile Ile Lys Glu Ser Thr Cys Leu Asn Tyr
805 810 815

Ser Asn Thr Val Leu Asn Ala Thr Tyr Ser Ser Asn Ile Pro Ile Gln
820 825 830

Pro Ile Glu Thr Phe Leu Val Gly Ile Gly Thr Tyr Glu Phe Arg Ile
835 840 845

Asn Met Thr Asp Leu Thr Thr Met Gln Val Val Ser His Ile Phe Thr
850 855 860

Leu Asn Val Val Ala Asp Ser Thr Ser Thr Ser Glu Val Thr Ser Thr

865 870 875 880

Thr Ser Thr Gly Ser Ser Ser Glu Ser Ser Ala Ile Ser Thr Thr Ser
885 890 895

Gly Ile Glu Ser Thr Ser Thr Leu Glu Ala Ser Thr Thr Asp Ala Ser
900 905 910

Gln Asp Ser Ser Thr Ser Thr Ser Asp Ser Gly Thr Thr Ser Asp Ser
915 920 925

Thr Thr Ile Asp Ser Ser Asn Ser Thr Pro Ser Thr Ser Asp Ser Ser
930 935 940

Gly Leu Ser Gln Thr Pro Ser Asp Ser Ser Ser Ala Ser Asp Ser Met
945 950 955 960

Arg Thr Thr Thr Val Asp Pro Asp Ala Ser Thr Glu Thr Pro Tyr Asp
965 970 975

Phe Val Leu Glu Asn Leu Thr Trp Asn Glu Thr Val Tyr Tyr Ser Glu
980 985 990

Asn Pro Phe Tyr Ile Thr Pro Ile Pro Asn Lys Glu Pro Gly Ala Leu
995 1000 1005

Thr Thr Ala Met Thr Cys Gln Cys Arg Asn Asp Ser Ser Gln Pro Phe
1010 1015 1020

Val Leu Leu Lys Glu Ser Asn Cys Leu Thr Glu Phe Gly Lys Asn Gly
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Ala Tyr Ser Ala Ser Val Ser Phe Asn Pro Met Thr Ser Phe Val Pro
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Ala Thr Gly Thr Tyr Glu Phe Leu Ile Asn Val Thr Asn Arg Ala Ser
1060 1065 1070

Gly Glu Ser Ala Ser His Ile Phe Thr Met Asn Val Val Leu Pro Thr
1075 1080 1085

Thr Thr Thr Glu Thr Pro Pro Thr Thr Val Ser Ser Ser Asp Asp Ala
1090 1095 1100

Gly Gly Lys Thr Gly Gly Thr Gly Ala Thr Gly Gly Thr Gly Gly Thr
1105 1110 1115 1120

Gly Ser Gly Gly Ser Ala Thr Thr Leu Ser Thr Gly Asp Ala Val Arg
1125 1130 1135

Ser Thr Thr Ser Gly Ser Gly Ser Gly Gln Ser Ser Thr Gly Ser Gly
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Ala Gly Gly Ser Gly Thr Thr Ala Ser Gly Ser Gly Ser Gly Gly Ser
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Ser Gly Thr Gly Ser Asp Gly Val Asn Ser Gly Lys Thr Thr Ala Leu
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Asn Gly Asp Gly Thr Gly Ser Gly Thr Ala Thr Thr Pro Gly Ser His
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Leu Gly Asp Gly Gly Ser Thr Ser Gly Ser Gly Ser Asp Ser Asn Gly
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Ser Ser Gly Val Ser Thr Lys Ser Ser Ser Gly Ser Asp Thr Ser Gly


1220 1225 1230

Ser Ser Asp Ser Ser Gly Ala Asn Gly Ala Phe Ser Ala Thr Ala Gln
1235 1240 1245

Pro Ser Thr Arg Thr Thr Lys Thr Arg Ser Ser Leu Ala Thr Val Ser
1250 1255 1260

Pro Ile Ser Ala Ala Glu Gln Ala Ile Ile Asp Ala Gln Lys Ala Asp
1265 1270 1275 1280

Val Met Asn Gln Leu Ala Gly Ile Met Asp Gly Ser Ala Ser Asn Asn
1285 1290 1295

Ser Leu Asn Thr Ser Ser Ser Leu Leu Asn Gln Ile Ser Ser Leu Pro
1300 1305 1310

Ala Ala Asp Leu Val Glu Val Ala Gln Ser Leu Leu Ser Asn Thr Leu
1315 1320 1325

Lys Ile Pro Gly Val Gly Asn Met Ser Ser Val Asp Val Leu Lys Thr
1330 1335 1340

Leu Gln Asp Asn Ile Ala Thr Thr Asn Ser Glu Leu Ala Asp Glu Met
1345 1350 1355 1360

Ala Lys Val Ile Thr Lys Leu Ala Asn Val Asn Met Thr Ser Ala Gln
1365 1370 1375

Ser Leu Asn Ser Val Leu Ser Ser Leu Asp Leu Ala Leu Lys Gly Ser
1380 1385 1390

Thr Val Tyr Thr Leu Gly Val Ser Ser Thr Lys Ser Lys Asp Gly Thr
1395 1400 1405

Tyr Ala Val Ile Phe Gly Tyr Val Ile Ala Ser Gly Tyr Thr Leu Val
1410 1415 1420

Ser Pro Arg Cys Thr Leu Ser Ile Tyr Gly Ser Thr Ile Tyr Leu Thr
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Gly Asp Thr Arg Ala Ser Tyr Lys Gln Leu Asp Gly Asp Thr Val Thr
1445 1450 1455

Ala Asp Thr Met Leu Ala Ala Ala Ile Gly Ile Gln Gly Met Phe Ala
1460 1465 1470

Thr Asn Gly Arg Thr Val Gln Val Glu Gln Asp Lys Ile Asp Asp Lys
1475 1480 1485

Arg Ser Leu Val Ser Gly Asn Ile Met Ala Thr Met Ser Gly Val Gly
1490 1495 1500

Asp Val Gln Ser Gly Glu Tyr Ser Tyr Asn Asp Met Tyr Val Thr Ala
1505 1510 1515 1520

Trp Asn Val Thr Tyr Asp Asn Ser Thr Val Gly Ser Thr Ser Gln Lys
1525 1530 1535

Asn Thr Ser Phe Ser Phe Asn Ile Pro Val Ser Glu Val Gln Tyr Ile
1540 1545 1550

Leu Leu Ile Glu Ser Gly Thr Met Ile Lys Leu His Ser Thr Gln Asn
1555 1560 1565

Ile Val Ser Arg Gly Leu Val Val Thr Ala Ser Tyr Gly Gly Val Thr
1570 1575 1580


Tyr Thr Ile Thr Cys Thr Asn Gly Thr Gly Lys Phe Val Glu Val Asp
1585 1590 1595 1600

Thr Asp Asn Ala Ile Phe Ser Tyr Asn Ala Asp Ser Phe Thr Val Val
1605 1610 1615

Ala Ser Asp Gly Ser Ser Ala Ser Thr Val Lys Lys Leu Ile Gln Met
1620 1625 1630

Pro Ile Val Ile Glu Asn Val Asn Leu Ala Leu Phe Asn Gln Thr Thr
1635 1640 1645

Ser Pro Leu Val Phe Ser Asn Ala Gly Ser Tyr Ser Met Arg Met Val
1650 1655 1660

Leu Ser Pro Gln Asp Ile Gly Ile Pro Ala Val Ser Ala Leu Ser Gln
1665 1670 1675 1680

Thr Val Ser Ile Ser Thr Leu Ser Pro Thr Ala Ser Tyr Thr Lys Asp
1685 1690 1695

Asp Leu Gln Ser Leu Ile Lys Glu Gln Thr Leu Val Thr Val Ser Gly
1700 1705 1710

Thr Thr Ser Asn Ser Leu Leu Ser Ile Ala Gly Ser Leu Thr Ser Ala
1715 1720 1725

Leu Lys Ile Ala Leu Asp Asn Pro Leu Ser Ser Asp Leu Ala Ala Asn
1730 1735 1740

Leu Lys Tyr Ala Thr Asp Asn Tyr Asp Ser Leu Tyr Asn Val Leu Pro
1745 1750 1755 1760

Ser Asp Pro Asp Asn Ile Val Tyr Val Glu Glu Met Thr Ser Glu Glu
1765 1770 1775

Trp Ala Ala Tyr Val Thr Lys Met Phe Gln Lys Asn Ile Ala Lys Asn
1780 1785 1790

Leu Ala Asn Gln Leu Ala Ser Thr Leu Asp Thr Leu Glu Asn Thr Leu
1795 1800 1805

Ala Ala Arg Ala Ile Ala Thr Gly Asn Leu Pro Tyr Asp Tyr Ser Asn
1810 1815 1820

Ser Val Asp Gly Thr Gly Met Val Ile Val Ile Asp Asp Ala Ser Asn
1825 1830 1835 1840

Ile Val Gly Lys Thr Gln Asn Cys Glu Glu Trp Ala Phe Lys Leu Pro
1845 1850 1855

Ser Pro Ala Ser Thr Leu Asn Thr Ala Glu Ile Thr Asp Lys Thr Leu
1860 1865 1870

Ile Gln Val Gly Leu Val Cys Tyr Ala Thr Asn Pro Arg Thr Tyr Val
1875 1880 1885

Asp Asn Phe Asp Met Leu Ile Thr Ser Gly Ala Leu Glu Ala His Ile
1890 1895 1900

Lys Asp Glu Asn Gln Ile Ile Ile Pro Ile Thr Gly Thr Thr Ala Pro
1905 1910 1915 1920

Ile Tyr Val Asn Gly Arg Gly Ser Glu Asp Asp Ala Val Leu Thr Leu
1925 1930 1935

Met Gln Gln Gly Asp Phe Ala Ser Tyr Gln Ile Leu Asp Leu His Ala
1940 1945 1950

Phe Arg Thr Thr Asn Trp Asn Asn Ser Leu Gln Val Glu Ile Ile Ala
1955 1960 1965

Ser Gln Asp Tyr Glu Ile Pro Asn Asn Asp Asp Thr Tyr Met Phe Ser
1970 1975 1980

Ser Phe Gln Ser Leu Pro Gly Pro Leu Glu Ser Asn His Glu Trp Ile
1985 1990 1995 2000

Phe Asp Leu Asn Thr Leu Asn Lys Thr Ser Asn Tyr Phe Val Thr Ala
2005 2010 2015

Gly Asn Leu Ile Asn Asn Thr Gly Leu Phe Phe Ile Gly Ile Gly Lys
2020 2025 2030

Arg Asn Ser Ser Thr Asn Thr Gly Asn Ser Ser Asp Ile Val Asn Tyr
2035 2040 2045

Gly Gln Tyr Asp Ser Met Gln Trp Ser Phe Ala Arg Ser Val Pro Met
2050 2055 2060

Asp Tyr Gln Val Ala Ala Val Ser Lys Gly Cys Tyr Phe Tyr Gln Lys
2065 2070 2075 2080

Thr Ser Asp Val Phe Asn Ser Gln Gly Met Tyr Pro Ser Asp Gly Gln
2085 2090 2095

Gly Met Gln Phe Val Asn Cys Ser Thr Asp His Leu Thr Met Phe Ser
2100 2105 2110

Val Gly Ala Phe Asn Pro Thr Ile Asp Ala Asp Phe Ser Tyr Asn Tyr
2115 2120 2125

Asn Val Asn Glu Ile Glu Lys Asn Val Lys Val Met Ile Ala Ala Val
2130 2135 2140

Phe Met Leu Val Val Tyr Gly Cys Leu Thr Ile Asn Ala Ile Ile Cys
2145 2150 2155 2160

Gln Arg Lys Asp Ala Ser Arg Gly Arg Leu Arg Phe Leu Lys Asp Asn
2165 2170 2175

Glu Pro His Asp Gly Tyr Met Tyr Val Ile Ala Val Glu Thr Gly Tyr
2180 2185 2190

Arg Met Phe Ala Thr Thr Asp Ser Thr Ile Cys Phe Asn Leu Ser Gly
2195 2200 2205

Asn Glu Gly Asp Gln Ile Phe Arg Ser Phe Arg Ser Glu Glu Asp Gly
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Asn Trp Glu Phe Pro Phe Ser Trp Gly Thr Thr Asp Arg Phe Val Met
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Thr Thr Ala Phe Pro Leu Gly Glu Leu Glu Tyr Met Arg Leu Trp Leu
2245 2250 2255

Asp Asp Ala Gly Leu Asp His Arg Glu Ser Trp Tyr Cys Asn Arg Ile
2260 2265 2270

Ile Val Lys Asp Leu Gln Thr Gln Asp Ile Tyr Tyr Phe Pro Phe Asn
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Asn Trp Leu Gly Thr Lys Asn Gly Asp Gly Glu Thr Glu Arg Leu Ala


2290 2295 2300

Arg Val Glu Tyr Lys Arg Arg Phe Leu Asp Glu Ser Met Ser Met His
2305 2310 2315 2320

Met Leu Ala Gln Thr Ile Ser Trp Phe Ala Met Phe Thr Gly Gly Gly
2325 2330 2335

Asn Arg Leu Arg Asp Arg Val Ser Arg Gln Asp Tyr Ser Val Ser Ile
2340 2345 2350

Ile Phe Ser Leu Val Val Val Ser Met Ile Ser Ile Thr Ile Leu Lys
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Ser Asp Asn Ser Ile Ile Ser Asp Ser Lys Ser Val Ser Glu Phe Thr
2370 2375 2380

Phe Thr Ile Lys Asp Ile Ala Phe Gly Val Gly Phe Gly Val Leu Ile
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Thr Phe Leu Asn Ser Leu His Ile Leu Leu Cys Thr Lys Cys Arg Ser
2405 2410 2415

His Ser Glu His Tyr Tyr Tyr Lys Lys Arg Lys Arg Glu Asp Pro Glu
2420 2425 2430

Phe Lys Asp Asn Ser Gly Ser Trp Pro Met Phe Met Ala Gly Met Ala
2435 2440 2445

Arg Thr Ile Ile Val Phe Pro Val Leu Met Gly Leu Ile Tyr Ile Ser
2450 2455 2460

Gly Ala Gly Met Ser Leu Met Asp Asp Leu Ala Asn Ser Phe Tyr Ile
2465 2470 2475 2480

Arg Phe Leu Ile Ser Leu Ile Leu Trp Ala Val Val Phe Glu Pro Ile
2485 2490 2495

Lys Gly Leu Ile Trp Ala Phe Leu Ile Leu Lys Thr Arg Lys Ser His
2500 2505 2510

Lys Ile Ile Asn Lys Leu Glu Gly Ser Asp Gly Thr Val Val Lys Tyr
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Tyr Glu Met Leu Tyr Ile Phe Phe Ser Val Leu Ile Phe Val Lys Glu
2530 2535 2540

Ile Val Phe Tyr Leu Tyr Gly Arg Tyr Lys Val Ile Thr Thr Met Lys
2545 2550 2555 2560

Pro Thr Arg Asn Pro Phe Lys Ile Val Tyr Gln Leu Ala Leu Gly Asn
2565 2570 2575

Phe Ser Pro Trp Asn Phe Met Asp Leu Ile Val Gly Ala Leu Ala Val
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Ala Ser Val Leu Ala Tyr Thr Ile Arg Gln Arg Thr Thr Asn Arg Ala
2595 2600 2605

Met Glu Asp Phe Asn Ala Asn Asn Gly Asn Ser Tyr Ile Asn Leu Thr
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Glu Gln Arg Asn Trp Glu Ile Val Phe Ser Tyr Cys Leu Ala Gly Ala
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Val Phe Phe Thr Ser Cys Lys Met Ile Arg Ile Leu Arg Phe Asn Arg

2645 2650 2655

Arg Ile Gly Val Leu Ala Ala Thr Leu Asp Asn Ala Leu Gly Ala Ile
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Val Ser Phe Gly Ile Ala Phe Leu Phe Phe Ser Met Thr Phe Asn Ser
2675 2680 2685

Val Leu Tyr Ala Val Leu Gly Asn Lys Met Gly Gly Tyr Arg Ser Leu
2690 2695 2700

Met Ala Thr Phe Gln Thr Ala Leu Ala Gly Met Leu Gly Lys Leu Asp
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Val Thr Ser Ile Gln Pro Ile Ser Gln Phe Ala Phe Val Val Ile Met
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Leu Tyr Met Ile Ala Gly Ser Lys Leu Val Leu Gln Leu Tyr Val Thr
2740 2745 2750

Ile Ile Met Phe Glu Phe Glu Glu Ile Arg Asn Asp Ser Glu Lys Gln
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Thr Asn Asp Tyr Glu Ile Ile Asp His Ile Lys Tyr Lys Thr Lys Arg
2770 2775 2780

Arg Leu Gly Leu Leu Glu Pro Lys Asp Phe Ala Pro Val Ser Ile Ala
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Asp Thr Gln Lys Asp Phe Arg Leu Phe His Ser Ala Val Ala Lys Val
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Asn Leu Leu His His Arg Ala Thr Arg Met Leu Gln Thr Gln Gly Gln
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Tyr Gln Asn Gln Thr Val Ile Asn Tyr Thr Leu Ser Tyr Asp Pro Val
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Asn Asp Val Glu Lys Asp
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Pro Phe Glu Glu Gly His Thr Leu Trp Met Lys Arg Glu Lys Ile Lys
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His Leu Gln Arg Ile Leu Gln Phe His Ser Asp Glu Ser Ile Leu Met
35 40 45

Ile Asp Lys Lys Leu Met Ile Ser Gly Gly Leu Glu Pro Pro Thr Phe
50 55 60

Cys Val Leu Asp Arg Cys Asp Asn His Tyr Thr Thr Lys Pro Arg His
65 70 75 80


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Leu Pro Pro Phe Glu Val Phe Leu Phe Val Val Ile Phe Lys Cys Glu
                85                  90                  95

Pro Ser Ser Met Asn Tyr Gly Ala Ala Asp Glu Arg Trp Ala Asn Pro
            100                 105                 110

Pro Gln Pro Val Ala Ala Ala Glu His Gly Pro Ser Phe Asp His Ser
        115                 120                 125

Met Val Ser Glu Glu Tyr Glu His Asp Lys Lys Lys Asn Pro Ala Gln
    130                 135                 140

Lys Glu Gly Ile Ser Phe Ser Gln Ala Leu Leu Ala Ser Gly His Glu
145                 150                 155                 160

Lys Ser Asp Gly Lys Ile Lys Leu Thr Ala Arg Ser Phe Met Glu Val
                165                 170                 175

Gly Gly Tyr Ala Val Phe Leu Ile Val Leu Val Tyr Asp Ser Ser Thr
            180                 185                 190

Pro Arg Gln Lys Ser Leu Lys Thr
        195                 200
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